and buy them, for we must have them to read and study. It would seem that it is impossible to repay an author, in money, for the intellectual labor expended upon his investigation, essay, memoir, or volume. Equally is it impossible for the reader to make a financial estimate of the intellectual stimulus and mental food that he receives by reading the book. Our modern intellectual and scientific life is above all financial and even utilitarian ideas. Money is very convenient as a medium of exchange in buying and selling ponderable matter, but it has no more definite relation to intellectual attainments than it has to pain or pleasure or the sentiment of justice. Meteorological journals or associations and meteorological progress in general will have to be prosecuted in the future as in the past by the sacrifice — say rather, by the devotion—of time and money and personal energies quite independent of the utilitarian aspects of the results that have been or will be attained.

In order that an American meteorological association should prosper with as little expense and friction as possible, it would be best to have but one meeting annually, at the time and place of the August meeting of the American Association for the Advancement of Science. This annual meeting need only occupy a part of one day, leaving the members free to attend all meetings of the general association. Its time need not be taken up with the discussion of scientific details that can be referred to the physical, geographical, and other sections of the Association, but it may be profitably given to the consideration of matters of business bearing on the promotion of the general interests of this special branch of science. The special annual meetings of several societies are now held under the shadow of the general American Association.

NOTES FROM THE REPORTS OF STATE SECTIONS.

ALABAMA.

Mr. A. M. Valerio, voluntary observer at Daphne, describes the smudge invented by the Meacham Bros., of Riverside, Cal., quoting from the Alabama report of April, 1897:

> The system is very simple. A piece of ordinary wire screen 4 feet square is fastened at the corners to four stakes set in the ground. Six inches in thickness of wet leaves or straw is placed on the screen, with a can of crude petroleum underneath. When the oil is ignited a dense white smoke arises, which soon fills the orchard, and so heavy that it does not rise much above the tree tops. There is an entire absence of sooty smoke which, in experiments in years gone by, proved objectionable because it rendered the fruit unfit for use, but in its stead is a white smoke. It is shown that twenty of these screen baskets are ample for a 10-acre orchard.

COLORADO.

From the special reports on snowfall the Section Director, F. H. Brandenburg, makes the following summary:

> The majority of the reports show that the snowfall during February was generally less than a foot, and, being very light, made little if any addition to the stock of snow at great altitudes, at best only making good the loss by evaporation. In the parks and hills of less elevation the high temperatures and bright sunshine caused not only a disappearance of the current fall, but of considerable old snow as well. A comparison of the averages for February, 1897, with current averages shows that the amount of snow on the ground in the parks and hills is about one-fourth as much as a year ago, and that on the highest ranges the depth is less than one-half that reported last year.

MARYLAND.

Mr. E. G. Kinsell, voluntary observer at Green Spring Furnace, Washington County, about 500 feet above sea level, gives an account of one of the heaviest local rainfalls. It occurred apparently on the 9th of August, 1887. It had been an exceedingly hot day and at about 5 p. m. dark storm clouds began to gather. About 6 p. m. it began raining heavily and so continued without intermission until 9:30 p. m. No rain gauge was at hand, but the water collected in buckets and barrels indicated a rainfall of 12 to 14 inches during that interval, both at Green Spring Furnace and at a point 2 miles north of it. This rainfall was confined to very narrow limits, covering an area that extended 4 or 5 miles from east to west and about 5 miles north and south. There was no wind whatever during the rain. Of course a great amount of damage was done within that area which is a few miles north of the Potomac River and the Chesapeake and Ohio Canal.

MONTANA.

The name of the station Hogan has been changed to Dearborn Canyon because its location at the base of the main range of the Rocky Mountains and in the mouth of the Canyon causes its climate to be much more like that of the station known by the same name than like that of the post office at Hogan, which is 13 miles distant.

On January 31 the observer at Greatfalls, Cascade County, recorded a series of hot winds in the south and southwest between 11:30 a. m. and 1:45 p. m., during which the temperatures rose to 58° or 71°, according to locality. The same hot wind was experienced over a narrow region, including Fort Benton in Choteau County and Fort Logan in Meagher County. The comparison of records at adjacent stations shows that the maximum temperature of 64° for January, reported by the Greatfalls observer, was, therefore, not an error, but the record of a fœhn wind. The observer states:

> Strange as it may seem, the "ranges," 20 miles distant, have been covered with ice and snow during the past months, but within that distance the ground around this locality is bare of snow and frozen only to a slight depth.

MINNESOTA AND NEBRASKA.

In both these reports we find extracts from a lecture by Dr. J. G. Macpherson on the formation of dew, as published in Symons' Monthly Meteorological Magazine, for May, 1897. Mr. Macpherson's explanations refer entirely to the dew observed on grass and other plants near the ground, and he correctly shows that this has been condensed so soon after its diffusion upward from the soil, that we may properly say that the water which forms the dew rises from the ground. But all the vapor in the whole atmosphere has risen either from the ground or from the ocean, and in general, whether dew is deposited on the grass or on the house tops or the mountain tops, it must be formed from vapor that originally rose from the earth or ocean. It conveys a wrong impression to say the dew does not fall from the air, for it certainly is condensed from the air upon cold surfaces. It is precipitation in the technical meteorological usage of that word, but does not fall like rain, in fact, it may be said to rise if it is found on the under side of a cold surface. The drops of sap that exude from the tips of many leaves are, of course not dew, but from their resemblance to it are called "false dew." Any attempt to measure the true quantity of dew must avoid including this exudation.

WISCONSIN.

Mr. Wilson gives a special chart and description of the exceptionally severe snowstorm of Saturday, February 19, and Sunday, the 20th. The heaviest snowfall occurred along the eastern and southern borders of the State; the fall at Milwaukee exceeded 24 inches and the drifts were from 10 to 15 feet deep. The timely warnings furnished by the Weather Bureau enabled railroad officials to make ample preparations. The center of the storm passed south of Wisconsin, and heavy northeast winds backing to north prevailed at Milwaukee for fifty-two hours.

THE SEMAQUIR.

The semaquir is said to be a curious stone found in Finland that turns black shortly before the approach of rain, but in fine dry weather it is mottled dark and white. Chem-

ical analysis shows that this stone contains rock salt and niter, which are hygroscopic. When they absorb the vapor from moist air the surface becomes black, but in dry weather the moisture evaporates from the surface and leaves a little of the salt, which has been brought from the interior of the stone, in white spots on the surface. The color of the stone is therefore due to its irregular absorption of the moisture in the air, and it should be called a hygroscope rather than a barometer.

The Editor would be glad to receive any confirmation of the preceding newspaper paragraph.

PECULIAR MOUNTAIN STORMS.

In the MONTHLY WEATHER REVIEW for May, 1897, page 212, will be found a letter from Mr. Joseph H. Struble, of Uniontown, Fayette County, Pa., latitude 39° 45′ N., longitude 79° 45′ W., relative to an interesting local phenomenon. The following additional letter has been received from him on the same subject:

We have in this locality a peculiar kind of what we call an eastern or mountain storm, of frequent occurrence, and which lasts from twenty-four to thirty-six hours. The first indication of the approaching phenomenon is the wind veering from north to east, and when due east it blows with great violence, apparently from over the crests of the Laurel Hill Range of mountains; apparently the storm is principally confined to a distance of about 2 or 3 miles along and from the base of the mountain, but prevails a considerable distance, running north and south at the base. This storm is not noticed east of the mountain or 4 miles from its base. When the storm works south, it ceases and winds up in rain, but never works north. The height of Laurel Hill Mountain Range is from 2,843 to 2,500 feet above the Atlantic Ocean. Uniontown is about 952 feet above sea level, on the National or Cumberland road. The storms alluded to are of more frequent occurrence in the fall and winter season of the year. I have noticed that ice would form on the trees about halfway down the mountain, showing a colder atmosphere on the top of the mountain than at its base during the winter season of the year. If you can tell me where I can obtain a description and explanation of the cause of such strange phenomena, or throw all the light necessary to explain the matter yourself, I will be obliged.

The Editor has already stated, in the REVIEW for May, 1897, that he hesitates to undertake an explanation of any meteorological phenomenon without a reasonable assurance that he is in possession of all the principal facts of the case. It is very much to be desired that Mr. Struble and others make a meteorological study of the region where these interesting stormwinds occur. What we wish to know is the temperature and moisture of the air, the strength and direction of the wind, and the location and motion of the clouds, for some distance east and west of the mountain storm region. It would be especially interesting if some one would fly a small kite on the summit of the Laurel Hill Range and, also, at several points on the western slope. We think it will be found that, even though no strong wind is blowing near the ground between the summit and the belt of stormwinds in the valley at the base of the mountain, yet such a wind will be found a short distance above the ground. Whenever a strong wind blows over a mountain range, it descends a little on the leeward side, and, under certain conditions, may descend like an invisible waterfall to the ground in the valley below. Of course, in such cases, a thin current of warm air clings to the leeward slope of the mountain, while the heavier upper air glides over it down into the valley below. If this descending air is cloudy at the start, then the evaporation of the cloudy particles will keep it cool until it reaches the valley, thereby neutralizing the warmth produced by the compression of the descending air. As the Laurel Hill Mountain Range is from 1,500 to 1,900 feet above Uniontown, the descending air may be warmed up at least 10° F. by compression. The barometer at Uniontown must be 1.5 or even 2 inches higher than at the top of the mountain. A cloud at the top of the mountain whose temperature is 32° F., and which is, therefore, composed of particles of water that are ready to turn into ice whenever they come into contact with any solid substance like the branches of the trees, would, if carried down with the descending winds, deposit ice or sleet during the upper half of its course, but, eventually, having evaporated the remaining particles, would strike the bottom lands as a raw wind whose temperature is slightly above 32°, and, therefore, warmer than the air halfway up the mountain.

A mountain range is not absolutely essential to the formation of these descending currents, they form a very conspicuous feature on the southwest and southeast sides of every general storm center, where cold, cloudy air is systematically pushed rapidly forward over warm, moist layers near the ground; of course, eventually the denser air descends, sometimes rapidly and sometimes on a very gentle decline. The rapid descents give us the gusty weather and the spits of snow or dashes of rain that precede the approach of the cold wave or the belt of clearing, cool, dry weather; the gentle descents give us a beautiful series of undulations in the thick stratum of clouds that may extend from 100 to 500 miles over the land. In general, the violent short-lived gusts on land and sea, whether in the midst of general storms or in clear, dry weather, represent masses of air that are descending by their own density through the surrounding air, and at the same time going forward with considerable velocity. When such descending masses strike the earth, they roll along for a short distance, the barometer suddenly rises a little; the denser air lifts up the warmer air, spreads out in all directions, and keeps its place permanently near the earth as a thin, flat layer until, having received a little heat from the soil or the ocean, it is ready to be pushed up by the next cold gust that descends. This process goes on perpetually in the atmosphere on every scale of magnitude; the little "catspaws" on the water, the flurries of dust on the roadway, the fœhn and the dry chinook winds, the gusty winds with spits of snow in the spring and autumn, the gusts with which the cold waves or northers begin, the straight line gusts that Hinrichs calls "derecho," the gusts that precede thunderstorms, the harmattan and the tornadoes of the west coast of Africa, the pamperos of South America, the trade winds of the tropics, are among the many illustrations of descending winds, some of which continue as horizontal winds for a long time after they reach the earth.

In a mountainous country where the hills are arranged in ridges so regularly as throughout the Appalachian Range, there is, so far as we can see, no reason why there should not be many cases similar to that of Uniontown. The descending air over Uniontown should, as it proceeds westward, rise again and, eventually, form a cloud, even if there be no special hill to the westward. In Espy's "Philosophy of Storms," page 552, a book that will, doubtless, be easily accessible to any voluntary observer in Pennsylvania, the so-called Helm wind of Crossfell, England, is explained essentially as follows: The Crossfell range of hills runs nearly north and south; when a violent east wind blows, the air on the west, or leeward slope, curves downward, as it does in passing across a hollow between two mountains, and is felt over a long narrow region on the west side of the mountain range. Over this windy region there is no cloud, but on the west of this region a distinct cloud is seen, always in the same position and called the "Bar," while on the east side of this region there is a cloud called the "Helm." This Helm cloud is simply the bold, clearly defined end of a series of clouds or a roll of clouds extending eastward behind the Helm. A similar series of clouds extends westward from the Bar. The open space overhead between the Helm and Bar extends 5, 10, or even 30 miles north and south, and is from one-half to five miles wide. It is simply an elliptical opening over the region where the descending cloudy air is so warmed up by its descent that the cloud mostly disappears; only small pieces